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BEEF PRODUCTION ON MOUNTAIN SUMMER RANGES

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In 1952 nearly 116,000 head of cattle and almost one quarter million sheep grazed the high mountain summer ranges on the national forests in Montana. In addition, unknown thousands of big game animals ranged over the same areas. This heavy grazing load is a measure of the importance of these high summer ranges in the economy and yearlong operation of a large segment of the range livestock industry in Montana.

Although these high ranges are extremely important and have been used by livestock for many years, little is known regarding their meat-producing potentials. How fast and how much weight do cattle gain on mountain summer range? When do they reach seasonal peak weights, and how big are the calves at the end of the grazing season? Answers to questions like these have been largely based on opinion because of the lack of reliable data.

In 1951 the Northern Rocky Mountain Forest and Range Experiment Station started a program to obtain cattle weight information at the Vigilante Experimental Range in southwestern Montana. Some information on weight performance of cattle on high summer ranges has already come from the study.

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THE VIGILANTE STUDY

The Vigilante Experimental Range, located in the upper Ruby River valley, varies in elevation from 6,100 to 8,200 feet and has a usable forage producing area of 3,205 acres. This range, typical of the upper Ruby, includes mountain meadow and grass-sagebrush subtypes as well as patches of aspen and conifers. Principal forage grasses are Idaho fescue (Festuca idahoensis), bluebunch, slender, and bearded wheatgrasses (Agropyron spicatum, A. trachycaulum, and A. subsecundum), and several bluegrasses (Poa spp.).

For the past several years the experimental range has been conservatively stocked with cattle for a five-month summer grazing season. The primary purpose of this stocking was to provide information on utilization and the effects of grazing on forage species. On June 7, 1952, 221 head of Hereford cattle were weighed individually following one night's rest on grass and water after a 65-mile drive. They were classed as to age and sex and eartagged for future identification, then turned loose to graze in the experimental area. Good distribution and uniform grazing use were obtained by abundant and readily available water and salt, supplemented by riding. Some, but not all, of the cattle were weighed several times during the summer grazing season. After 143 days on the experimental range all the cattle were removed on October 28 and again weighed individually. Scales and corrals used in the study are shown in figure 1. The background view is typical of much of the high mountain range in southwestern Montana.

RESULTS

TOTAL AND DAILY GAINS

All classes of cattle made substantial gains during the 1952 grazing season (table 1). Yearling and two-year-old heifers gained the most, over 300 pounds each on the average, followed by spring calves, cows, steers, and bulls in that order. Wet cows made a net average gain of almost 260 pounds over the entire season. Calves tripled their entrance weights, gaining 284 pounds during the season. Even the bulls put on a substantial gain of over 160 pounds.

These gains compare favorably with those reported from native ranges in other western states. The Vigilante yearling heifers gained from 0.4 to 0.8 pounds per day more than yearlings on mountain ranges in Colorado (7)[1/] and California (9). The two-pound daily gain for calves was about one-third of a pound higher than reported for calves on moderately stocked short-grass ranges in eastern Montana (4). Even feedlot gains ordinarily run only one-sixth to one-third of a pound per day more than the increases made by various classes of cattle on the Vigilante Range (2).

1/ Numbers in parentheses refer to literature cited.

Figure 1. Corral and Scales used in the Vigilante cattle weight study

Table 1. Weights and gains of cattle on the Vigilante Experimental Range

Class of Cattle	No.	Weights		Average Gains	
		Initial	Final	Summer	Daily
		(Pounds)		(Pounds)	
Breeding cows	117	783.4	1042.6[1]	259.2	1.8
Spring calves[2]	80	140.0	424.1	284.1	2.0
2-Year heifers	11	567.0	874.3	307.3	2.1
Yearling heifers	7	427.0	730.7	303.7	2.1
Yearling steers	1	440.0	672.0	232.0	1.6
Bulls	5	1183.0	1347.0	164.2	1.1
Summer calves[3]	15	--	248.5	--	--

[1] Based on 112 cows as 5 were missed during final roundup.

[2] On hand at start of grazing season.

[3] Calves born on range; only final weights available.

WEIGHT TRENDS

Only a few animals were weighed frequently enough during the summer to establish summer weight trends. One small group of wet cows gained weight rapidly until August 22, then continued at a somewhat lower rate to October 1. Despite a warm, favorable, dry fall they lost an average of 42 pounds during the remainder of the grazing season (figure 2). Another slightly larger group of wet cows followed the same trend in October by losing an average of 53 pounds -- almost two pounds per day. Individual losses ranged from 3 to 116 pounds during the 27-day period.

A small group of calves weighed several times during the summer more than doubled their June 7 weights by August 22. Rate of gain declined considerably thereafter until September 19 and then increased to the highest level for the season. For the remainder of the season, October 1 to 28, the calves gained rather slowly -- less than a pound a day.

Since the weather was abnormally warm and dry during the latter part of the grazing season and there was considerable forage remaining on the range after the grazing season, the October weight losses were attributed to low nutritive qualities of the cured forage. Several workers have shown that protein, ash, carbohydrate, fat, calcium, and phosphorus decline in native western forage species as curing occurs (1)(3)(5)(6)(8). Some nutrients also become less digestible as the plants mature (8). The declining rate of gain for the calves was undoubtedly due to a combination of low quality of the dry, mature forage and decreased milk production by the cows.

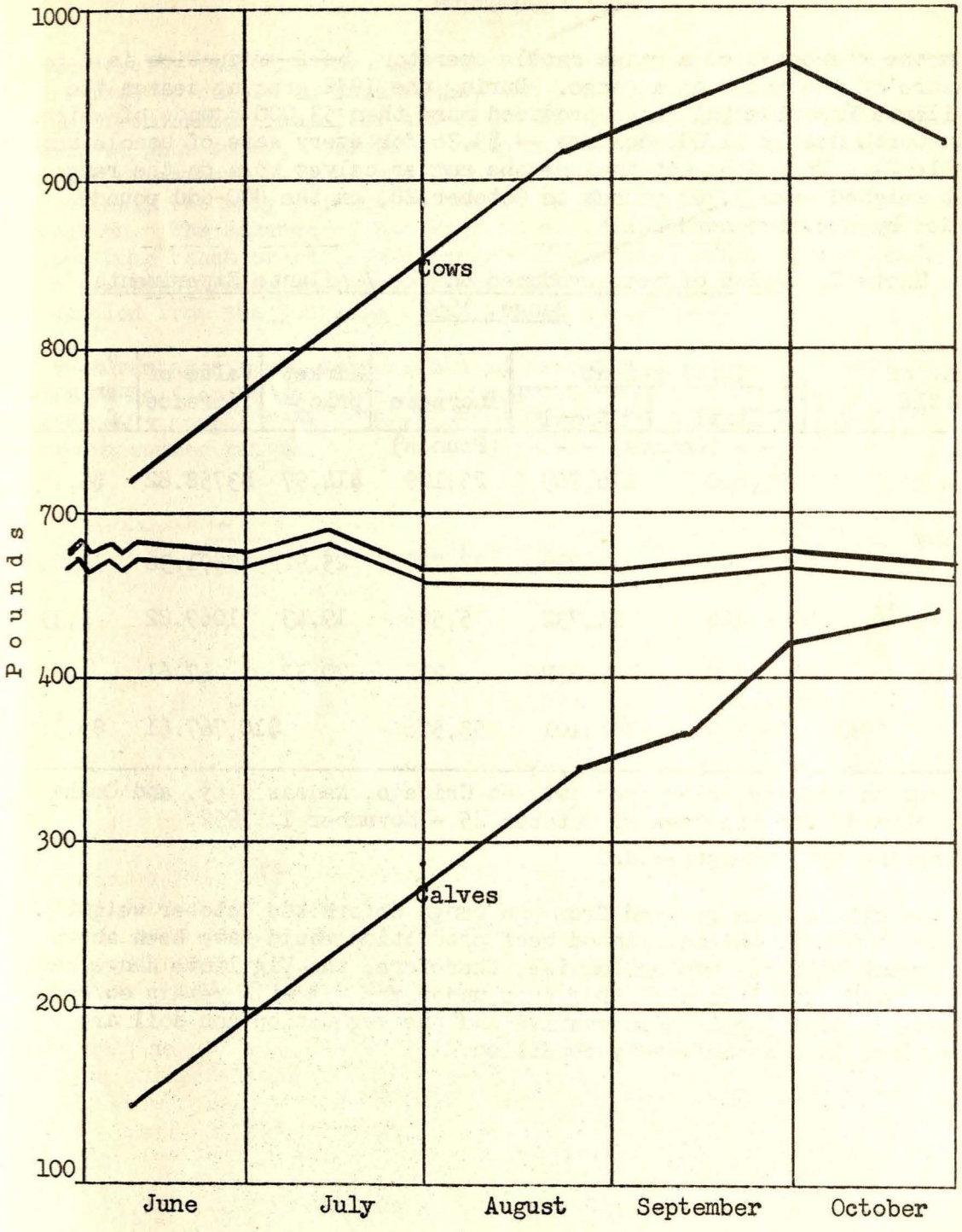

Figure 2. Average seasonal weight trends in pounds for 8 cows and 5 calves, Vigilante Experimental Range, 1952.

BEEF PRODUCTION

From the viewpoint of a range cattle operator, beef production is a good measure of the value of a range. During the 1952 grazing season the Vigilante Experimental Range produced more than 53,000 pounds of weight gain worth nearly 11,000 dollars -- $3.36 for every acre of usable range (table 2). This does not include the summer calves born on the range that weighed over 3,700 pounds on October 28, or the 800-odd pounds gained by the five herd bulls.

Table 2. Value of beef produced on the Vigilante Experimental Range, 1952

Class of Cattle		Total weight		Increase	Market price[1]	Value of increase	Value per acre of range
		Initial	Final				
		- - - (Pounds) - - -		(Pounds)			
Cows	117	91,660	116,769	25,109	$14.97	$3758.82	$1.17
Spring calves	80	11,199	33,928	22,729	25.92	5891.36	1.84
Heifers[2]	18	9,226	14,732	5,506	19.43	1069.82	.33
Steers	1 / 216	440	672	232	20.52	47.61	.02
TOTAL		112,525	166,101	53,576		$10,767.61	$3.36

[1] Based on average prices per cwt. at Chicago, Kansas City, and Omaha stockyards for the week of October 25 - November 1, 1952.

[2] Yearling and two-year-olds.

Had the cattle been removed from the range before the October weight losses occurred, the calculated beef production would have been about 11 percent higher. Productionwise, therefore, the Vigilante Range rates pretty high, but like any other area under use, it will remain so only as long as stocking is conservative and the vegetation and soil are maintained in a satisfactory condition.

DISCUSSION

These results indicate the high value of the summer range, the unusual gains made by cattle on such range, and the approximate return per animal from summer range for any class of cattle. Knowing when peak summer weights occur, operators can plan selling programs to take advantage of maximum weights and favorable market conditions. Summer is essentially the only productive period in the average range livestock operation. The balance of the year is simply a maintenance proposition on the home ranch or on leased range. Therefore, complete knowledge of cattle weight trends on summer range will provide a means of sustaining production from the yearlong operation at a high level.

Other advantages, such as possible adjustments in breeding season to increase calf crops and more advantageously time their arrivals, will undoubtedly accrue from a thorough knowledge of cattle performance on mountain summer ranges.

Total animals

Incl. calves.	Excl calves
117	117
80	11
11	7
7	1
1	5
5	
15	
236	141
	95
	236

236 animals per 3,205A
or 10.36A per animal.

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